

ELECTROMAGNETIC ACTUATOR HAVING SPECIFIC COIL
ARRANGEMENT FOR IMPROVING UTILIZATION RATE
OF MAGNETIC CIRCUIT THEREOF

5 ABSTRACT OF THE DISCLOSURE

An electromagnetic actuator with an improved utilization rate of magnetic circuit for efficiently moving an objective lens on micro levels along a focusing direction and a tracking direction is disclosed. The electromagnetic actuator includes two homopolar parts spaced with a clearance small enough for generating magnetic force lines including a first and a second smooth portions which are preferably linear. The electromagnetic actuator further includes a first and a second actuating coil sets connected to the holder of the objective lens for moving the objective lens along the focusing and the tracking directions, respectively. The first and the second actuating coil sets are arranged around the homopolar parts with coil walls thereof substantially perpendicular to the first and the second smooth portions, respectively, so that they themselves move in the focusing and/or tracking directions in response to the currents and the magnetic force lines applied thereto to actuate the lens holder.